

short free branches, about half an inch in length; margins of apertures with a deep notch, which is filled up by a transparent membrane.

3. *P. fruticosa*, nov. spec.—Polypidom shrubby, adherent in but a small part of its extent, suddenly dilated towards the apertures; margins of apertures entire.

Genus FREDERICELLA.

Char.—Polypidom fixed, coriaceous, tubular, branched. Polypes issuing from the extremities of the branches; tentacular disc orbicular; tentacula arranged on the margin of the disc in a single series, less numerous than in *Plumatella* (about twenty-four), invested at their origin by a membrane.

1. *F. Sultana*.

2. *F. dilatata*, nov. spec.—Polypidom dilated towards the apertures.

Family PALUDICELLAIIDÆ.

Genus PALUDICELLA.

Char.—Polypidom fixed, coriaceous, consisting of a single series of claviform cells with a catenulated arrangement; apertures unilateral, tubular, placed near the wide end of the cell. Tentacular disc of polypes orbicular, bearing upon its margin a single series of tentacula; tentacula free.

P. articulata.

XL.—On the Marine Algæ of the vicinity of Aberdeen. By G. DICKIE, M.D., Lecturer on Botany in the University and King's College of Aberdeen.

[Continued from p. 10.]

[With a Plate.]

Himanthalia lorea.—This remarkable plant is not uncommon at Aberdeen. It usually occurs in detached patches: many parts of the coast are destitute of it; in other spots it is in great profusion, and is most usually found near low-water mark. In this vicinity it seldom attains any great size, rarely exceeding 2 to 2½ feet.

Dr. Montagne's statement, that it possesses both *acrosperms* and *basisperms* on different individuals, is quite correct, as I have verified by examining an extensive series of specimens.

While the thong-shaped receptacles are still immature, their surface is covered with numerous pores from which filaments issue, and exactly resemble those on the species of *Fucus*, and which in a former paper were stated to be barren *conceptacles*. In *Himanthalia* they are generally all ultimately fertile, producing, as already mentioned, either *acrosperms* or *basisperms*.

Some difference of opinion has arisen respecting the nature of the frond in this plant; the peziziform expansion being considered by some as the true frond, and the elongated part as a true receptacle. In a paper on the Botany of the Antarctic Expedition, published in the 'London Journal of Botany' for June 1843, Dr. J. D. Hooker states his belief, that the frond of *Himanthalia* is an abortive bladder analogous to the trumpet of *Ecklonia buccinalis*, and finds no reason to suppose that the thongs are receptacles. He believes that *Himanthalia*, *Ecklonia* and *Durvillæa* will form a distinct group.

The young fronds are well represented by Dr. Greville in his 'Algæ.' A section shows first a cortical part composed of dense tissue, beneath which there is a subcortical less dense than the former and more transparent; in the centre the tissue is composed of jointed and branched filaments, whose general direction is from base to apex of the small dilated frond: this tissue is highly elastic. The young frond is at first turgid with a fluid partly mucus and partly water. At an early period there is no distinct stem, the vesicle being attached by a flat disc. At a more advanced stage, however, the stem becomes evident, and its general structure is the same as that of the vesicle itself, three distinct tissues being present; sometimes two vesicles originate from the same flat disc or root, and then one is usually larger than the other.

In a more advanced stage the stem becomes very distinct, having increased in proportion more rapidly than the inflated part. The vesicle afterwards becomes depressed in the centre, at which time a firm band of fibrous tissue connects the stem with the disc of the inflated part, and the two come in close contact, thus producing a depression in the centre of the vesicle, all which is produced by the contraction of the central fibrous band alluded to.

The thongs, or receptacles, first appear as small papillæ in the centre of the depressed portion, and are intimately connected with the above-mentioned fibrous band, their central tissue being continuous with it, and their outer with the cortical part of the vesicle.

Mrs. Griffiths and Dr. Greville believe the plant to be annual. Capt. Carmichael considered the cup alone to be perennial and the thongs annual; he also supposed that every part of the cup is capable of producing them, as he found them eccentric in old plants. I have never seen them eccentric excepting where the frond had become distorted from injury produced by the attacks of small mollusca and crustacea. The thongs are continuous with the fibrous band already mentioned, and cannot therefore, properly speaking, be eccentric. The peziziform part is produced one season, and in the following forms receptacles, which, when

mature, drop off near their origin, or are torn away by the action of the water. The frond never, I believe, produces fresh receptacles, although it often remains attached to the rocks for some time after the former have disappeared.

Mature specimens some time after being gathered readily give out their *basisperms* and *acrosperms*, the latter appearing in the form of a slimy mucus. Plate VI. fig. 1. represents a not uncommon form of the last; in the same conceptacle, however, several different varieties may be seen, owing no doubt to their not all reaching maturity at the same period. Fig. 2 represents the ripe sporidia after expulsion from the asci which contained them.

LICHINEÆ.

Lichina confinis, Ag.—Of the two British species, this is the only one which I have hitherto found on this coast, where it is abundant on rocks a little above high-water mark. If the other species does not actually grow here, this may be considered by some an evidence in favour of the opinion that they are distinct species, the one being considered by authors a mere variety of the other.

LAMINARIEÆ.

Alaria esculenta, Grev.—This plant is very abundant upon all parts of the coast, and is most usually found near low-water mark. Turner defines the fructification as consisting of “small pyriform pellucid seeds, internally dotted, having on their largest extremity a white transparent globule.” Dr. Greville, in his ‘*Algæ*,’ describes the fructification as being composed of “pyriform seeds, vertically arranged in the incrassated leaflets;” his figure, however, corresponds with Turner’s definition. In the latest work on the subject to which I have access, Harvey’s ‘*Manual*,’ Dr. Greville’s character of the fructification is adopted. After a careful examination of numerous specimens in different stages, I am constrained to call in question the accuracy of the above statements.

Fig. 3. tab. 4. of the ‘*Algæ Britannicæ*’ gives a good idea of the structure of a perpendicular section under a low magnifier.

With a higher power the true nature of the fructification becomes evident; it consists of transparent clavate tubes (*asci*) inclosing solitary simple *sporidia*. Turner’s statement respecting the terminal transparent globule must have originated from the position of the inclosed sporidia in their asci, which is evident from the accompanying figure, Fig. 3. Plate VI., the part of the tube beyond the summit of the sporidium presenting an approach to the figure of Greville when viewed with a low and ill-defining lens. Fig. 4 represents a sporidium separately. The surface of

the frond in *Alaria* is covered with scattered pores, from which protrude *simple* filaments. These pores and *simple* filaments are evidently the analogues of the basispermal fructification of the *Fuci* described in a former communication.

Laminaria digitata, Lamour.—This species occurs in great profusion: in pools at and within high-water mark it is of small size, the plant attaining large dimensions in deep water only.

In this species I have had numerous opportunities of examining the fructification, which, on this part of the coast at least, is usually found in June and July, at which time that of *Alaria* is also mature. The specimens of *L. digitata* which usually bear fruit most copiously are those old distorted individuals found at low-water mark, and which also never attain any great size. It occurs on the laciniaë of the frond in the form of elevated spots of an oval or circular form, and more opaque than the surrounding parts. Turner had not seen the fructification of this species, but quotes Roth and Stackhouse respecting it, doubting at the same time whether even they had seen the true fructification. The former speaks of it as immersed in the substance of the laciniaë, and showing itself by plicæ and mucifluous pores; the latter says it consists of thin inflated pellicles of various forms; it is added, the papillæ perforated at top are often discoverable, particularly after the seeds are shed, even in dry specimens; further, the seeds are like small blackish dust under a high magnifier (Turner's 'Fuci').

On making a perpendicular section of the spots alluded to, the same appearance is presented as in *Alaria*, viz. clavate *asci* arranged perpendicularly toward the surface of the frond, and inclosing simple solitary *sporidia*; the latter, however, differ in form from those of *Alaria*. Figs. 5 and 6 represent the *asci* and *sporidia* of the species under discussion. In a former paper it was stated as a reason for believing the *acrosperms* of the species of *Fucus* to be one means of propagating these plants, that the fructification of *Alaria* and *Laminaria* is essentially of the same nature, and it evidently is so, the *branched* filaments accompanying those of *Fucus* constituting the only difference; these filaments can scarcely be considered essential parts of the fructification of *Fucus*. The *acrosperms* of Montagne, and the reproductive organs of the *Laminariæ*, are therefore evidently composed of *asci* inclosing solitary simple *sporidia*.

It may be observed that some authors include *Alaria* in the genus *Laminaria*, as for example Endlicher in his 'Genera Plantarum.' It is very remarkable that *L. bulbosa*, Lamour., has not hitherto been seen in this vicinity; I have often searched for it at low tides, but in vain; and among the thousands of specimens of *L. digitata*, &c. cast up after storms, not a trace of it has been

seen. It evidently presents several analogies to *Alaria*, the stem near its base sometimes presenting appendages approaching to the fruit-bearing leaflets of that plant; on its surface also pores and accompanying filaments are numerous.

Laminaria saccharina, Lamour.—This species is very common on all parts of the coast; it never, however, attains the great size which it does in more favourable localities. From the figures accompanying this and the former paper, it might be supposed that the *sporidia* alluded to are not simple but contain *sporidiola*; such however is not the case, the inclosed bodies being composed of granular matter cohering in masses and assuming a regular arrangement. In *L. digitata* this granular matter is very abundant and has less tendency to cohere, and the regular arrangement of it is also not very evident.

[To be continued.]

XLI. — *Catalogue of Irish Entozoa, with observations.* By O'BRYEN BELLINGHAM, M.D., Fellow of and Professor of Botany to the Royal College of Surgeons in Ireland, Member of the Royal Zoological, Geological and Natural History Societies of Dublin, &c.

[Continued from p. 260.]

Order 3. TREMATODA.

(Derived from τρημα, *foramen*.)

“Corpus depressum vel teretiusculum, molle. Pori suctorii. Omnia individua androgyna.”—*Rud. Synop.*

THE order *Trematoda* corresponds very nearly to the order *Porocephala* of De Blainville. The species included in it, though differing much in shape from one another, have this general resemblance, that they are all provided with one or more distinct pores or suckers, disposed upon the body in different ways; and according to the number of the pores, or their disposition upon the surface, the genera have been formed.

The head is rarely separated from the body by a neck. The body is soft, either flattened, oval, elliptical, linear or cylindrical. Each individual possesses the organs of reproduction of both sexes. The species occur in mammalia, birds, reptiles and fish; they generally inhabit some part of the alimentary canal.

Genus 10. MONOSTOMA.

(Derived from μόνος, *unus*, and στόμα, *os*.)

Body soft, either flattened or subcylindrical. A single anterior pore; no abdominal pore, or posterior terminal orifice.